

Remarks

Further and favorable reconsideration is respectfully requested in view of the foregoing amendments and following remarks.

Thus, claim 2 has been amended in response to the rejection of this claim under the second paragraph of 35 U.S.C. §112, by changing “obtainable” to --produced--. Applicants respectfully submit that this amendment renders the rejection of claim 2 under 35 U.S.C. §112 moot.

Claim 2 has been further amended to change “with use” to --in the presence-- to place it in more conventional form according to U.S. practice.

Furthermore, although claim 2 is an independent claim, it does not define formulae (1) and (2). These formulae, taken from claim 1, have now been incorporated into claim 2.

Claim 1 has been amended to place it in more conventional form according to U.S. practice, using --which comprises polymerizing-- instead of “characterized in that”, and also changing “with use” to --in the presence--.

Like claim 2, claim 3 is also an independent claim which does not define formulae (1) and (2). Claim 3 has been amended, in the same manner as claim 2, to incorporate these formulae from claim 1.

The patentability of the presently claimed invention over the disclosures of the references relied upon by the Examiner in rejecting the claims will be apparent upon consideration of the following remarks.

Initially, all of the three prior art rejections refer to claims 1-5, whereas only claims 1-3 (the original claims) are pending in the application, as correctly indicated on the Office Action Summary page. Therefore, the following remarks will be directed to claims 1-3.

The rejection of claims 1-3 under 35 U.S.C. §102(a) as being anticipated by Goto et al. (“Mechanism-Based Invention of High-Speed Living Radical Polymerization Using Organotellurium Compounds and Azo-Initiators”, Journal of the American Chemical Society, 2003, 125, 8720-8721), is respectfully traversed.

The publication date of March 27, 2003 for this reference as indicated on the Notice of References Cited form attached to the Office Action, must be a mistake on the Examiner’s part. The heading of the reference itself indicates that it was not even received (by the publisher) until

April 4, 2003. The reference heading also indicates that it was published on the web June 25, 2003.

Therefore, Applicants can overcome the Goto et al. reference by obtaining the benefit of the filing date of their Japanese priority application, April 25, 2003, which is prior to the publication date of the Goto et al. reference. For this purpose, Applicants are enclosing a verified English translation of the priority application. The Examiner has already acknowledged receipt of a certified copy of the priority application.

Accordingly, Applicants respectfully submit that the Goto et al. reference is not prior art against their invention, as a result of which the rejection based on this reference should be withdrawn.

Applicants will now discuss the other two prior art rejections raised by the Examiner.

The present invention provides a process for producing a living radical polymer by polymerizing a vinyl monomer with use of an organotellurium compound represented by the formula (1), an azo type polymerization initiator and a ditelluride compound represented by the formula (2), the process making possible precision control of molecular weights and molecular weight distributions (PD=Mw/Mn).

The present invention provides a living radical polymer under mild conditions, in a short period of time and at a high yield.

The rejection of claims 1-3 under 35 U.S.C. §102(a) as being unpatentable (obvious) over Yamago et al. (“Tailored Synthesis of Structurally Defined Polymers by Organotellurium-Mediated Living Radical Polymerization”, Journal of American Chemical Society, 2002, 124, 13666-13667) in view of Alger (“Polymer Science Dictionary”, 2nd Edition”, Chapman & Hall, 1997), is respectfully traversed.

Initially, although the rejection is under 35 U.S.C. §102(a), the Examiner takes the position that references render the claimed subject matter “obvious”. Therefore, Applicants assume that the Examiner meant to reject the claims under 35 U.S.C. §103(a).

The Yamago et al. reference discloses a living radical polymerization of vinyl monomers with use of an organotellurium initiator and ditelluride compound, but as recognized by the Examiner, discloses nothing about use of azo type polymerization initiator.

In this respect, Alger defines azo initiator, i.e. merely teaches that an azo initiator is a well known type of initiator for polymerization. It is commonly known that polymers prepared

with use of azo initiator inherently have broad molecular weight distributions or polydispersities. For example, in Polymer Bulletin 43, 143-150 (1999), a copy of which is enclosed, cited on page 2 of the present specification, styrene is polymerized with use of AIBN only to obtain polystyrene having $PD(Mw/Mn)=2.46$ in Table 2, run 1 of page 146.

Accordingly, a person skilled in the art would not combine the azo initiator with the method disclosed in Yamago et al., since the azo initiators inherently have broad molecular weight distributions or polydispersities.

After acknowledging that the Yamago et al. reference does not disclose the use of an azo type polymerization initiator, and noting that such type of initiators are disclosed in Alger, the Examiner takes the position that it would have been obvious to one having ordinary skill in the art to incorporate azo type polymerization initiators as taught by Alger in Yamago et al.'s polymerization process with reasonable expectation of success, because it is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose, citing *In re Kerkhoven*, *In re Crockett* and *Ex parte Quadranti*.

However, referring to MPEP 2143 and 2143.01, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings; and obviousness can only be established by combining the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so, citing *In re Kahn*, 78 USPQ2d 1329 (Fed. Cir. 2006); and further, the teaching, suggestion or motivation must be found either explicitly or implicitly **in the references themselves or in the knowledge generally available to one of ordinary skill in the art**. Please note that the *In re Kahn* decision was handed down well after the CCPA decisions (*In re Kerkhoven* and *In re Crockett*) cited by the Examiner, and that unlike the *Ex parte Quadranti* decision cited by the Examiner, which is a Board of Patent Appeals and Interferences decision, the *In re Kahn* decision was handed down by the CAFC, which takes precedence over Board decisions.

Applicants take the position that the Examiner has failed to establish that there is any teaching, suggestion, or motivation to combine the Yamago et al. and Alger references, and therefore, has failed to establish a *prima facie* case of obviousness. The Alger reference is merely a dictionary, which defines “azo initiator”, and as noted by the Examiner, Yamago et al.

does not disclose use of azo type initiators. The references certainly do not provide the art-skilled with any teaching, suggestion or motivation to incorporate the azo type initiator of Alger in Yamago et al.'s polymerization process.

Furthermore, considering the discussion of unexpected superior results achieved in accordance with the present invention set forth above, Applicants take the position that even if a presumption of obviousness has been established, it has been overcome in view of this showing.

The rejection of claims 1-3 under 35 U.S.C. §103(a) as being unpatentable over Yamago et al. ("Organotellurium Compound as Novel Initiators for Controlled/Living Radical Polymerizations. Synthesis of Functionalized Polystyrenes and End-Group Modifications", Journal of the American Chemical Society, 124 (12), 2874-2875, 2002.02.27) in view of Leonard et al. (US 4,124,633) and Alger, is respectfully traversed.

This second Yamago et al. reference discloses organotellurium initiators for controlled living radical polymerization of styrene derivatives, but discloses nothing about conjoint use of organotellurium initiator and azo type polymerization initiator. In this respect, Leonard et al. and Alger were cited by the Examiner.

Leonard et al. disclose a process for the preparation of acrylic acid or methacrylic acid which comprises catalytically decomposing the corresponding unsaturated intermediate peroxide compounds, peracrylic acid and acrolein monoperacrylate or permethacrylic acid and monopermethacrylate, contained in an oxidate solution in the presence of the oxidate reaction mixture of a tellurium catalyst, the oxidate solution being derived from the liquid phase autoxidation of acrolein or methacrolein, and recovering the acrylic or methacrylic acid.

Thus, Leonard et al. employ **peracrylic acid** or **permethacrylic acid** which are peroxide compounds, but do not disclose or suggest **polyacrylic acid** or **polymethacrylic acid**. That is, Leonard et al. fail to teach or suggest polymerization of vinyl monomer.

Accordingly, Applicants take the position that it is unreasonable to combine Leonard et al. with Yamago et al., since they are not directed to the same field of endeavor.

The comments set forth above concerning the Alger reference are equally applicable to this rejection.

For these reasons, Applicants take the position that the presently claimed invention is clearly patentable over the applied references.

Therefore, in view of the foregoing amendments and remarks, it is submitted that each of the grounds of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

Respectfully submitted,

Shigeru YAMAGO et al.

By:



Michael R. Davis

Registration No. 25,134

Attorney for Applicants

MRD/pth
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
March 16, 2007